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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,002	10/31/2003	Kiwamu Tanahashi	NIT-401	9915

7590 12/08/2004
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EXAMINER

RICKMAN, HOLLY C

ART UNIT PAPER NUMBER

1773

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/697,002

Applicant(s)

TANAHASHI ET AL.

Examiner

Holly Rickman

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 13-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/31/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-12, drawn to a magnetic recording medium, classified in class 428, subclass 694TM.
 - II. Claims 13-16, drawn to a method of making a magnetic recording medium, classified in class 427, subclass 130.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions Group I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the article as claimed can be made by a materially different process. For example, the claimed recording medium can be formed by a sputtering process without heating the substrate.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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4. During a telephone conversation with Dan Stanger on 11/3/04 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 13-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

6. Claim 7 is objected to because of the following informalities: "field" is misspelled in line 5 of claim 7. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a NiFe layer or a layer having a fcc structure, does not reasonably

provide enablement for a soft magnetic layer, broadly, which has an fcc structure. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 8-9 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8-9 are rendered indefinite by the use of the phrase "single-pole-type head." It has been held that the use of the term "type" renders an otherwise definite expression indefinite. See MPEP 2173.05(b).

Claim 11 lacks clear antecedent basis for "a soft magnetic layer" in line 3. Is this layer referring to "said soft magnetic layer" set forth in claim 10 or an additional soft magnetic layer? For purposes of examination, the claim has been interpreted as requiring an additional soft magnetic layer underneath the antiferromagnetic layer.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-2, 4-6, and 8-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Carey et al. (US 2003/0022023).

Carey et al. disclose a magnetic recording medium for use with a single-pole recording head having a multiple soft magnetic layers separated by non-magnetic coupling layers such that the soft magnetic layers are antiferromagnetically coupled. The reference teaches that an antiferromagnetic biasing layer is deposited between the lowermost soft magnetic layer and the substrate and a perpendicular magnetic layer is deposited on top of the soft magnetic multi-layered stack. Carey et al. teach that several different amorphous soft magnetic materials including CoZrNb can be used for the soft magnetic layers. It is the Examiner's contention that the group of disclosed materials suitable for forming the soft magnetic layers is small enough that one of ordinary skill in the art would immediately envisage an embodiment of the invention having one of the disclosed amorphous alloys. See Fig. 1, 2, 3A; paragraphs 2, 12, 14, 16, 18, 20, 24, 27.

With respect to claim 2, it is the Examiner's position that the claim reads on the structure shown in Figure 2. Layer number 11 shown in Figure 2 is a magnetic layer deposited on top of the antiferromagnetic layer 40. Layer 11 corresponds to the claimed ferromagnetic layer deposited on the antiferromagnetic layer.

Claim Rejections - 35 USC § 102/103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 7 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Carey et al. (US 2003/0022023).

Carey et al. disclose all of the limitations of the claim as detailed above, except for the limitations directed to the magnetization curve of the soft magnetic underlayer and the values of the switching fields.

It is the Examiner's contention that Carey et al. inherently satisfy the limitations of the claim by virtue of the fact that Carey et al. teach a recording medium that is substantially the same in composition and structure as the claimed medium. Thus, one of ordinary skill in the art would expect the two media to exhibit the same magnetic properties.

It has been held that where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC §102 or on prima facie obviousness under 35 USC §103, jointly or alternatively. *In re Best, Bolton, and Shaw*, 195 USPQ 430. (CCPA 1977).

Claim Rejections - 35 USC § 103

15. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al. (US 2003/0022023) in view of Girt et al. (US 6645614).

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Carey et al. teach all of the limitations of the claim as detailed above, except for the use of ferromagnetic layers separating each soft magnetic layer from the non-magnetic layer therebetween.

Girt et al. teach that it is known in the art to insert ferromagnetic interface layers between a non-magnetic coupling layer and antiferromagnetically coupled magnetic layers in order to increase the thermal stability of the recording medium (see abstract).

It would have been obvious to one of ordinary skill in the art at the time of invention to add ferromagnetic interface layers to the structure taught by Carey et al. in order to increase the thermal stability of the medium as suggested by Girt et al.

Allowable Subject Matter

16. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The closest prior art to Carey et al. fails to teach or suggest the claimed combination of an antiferromagnetic layer underlying an antiferromagnetically coupled soft magnetic underlayer having an underlying bcc alloy layer containing Co and Fe.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shukh et al. (US 6818330) is cited as art of interest.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Holly Rickman
Primary Examiner
Art Unit 1773

December 7, 2004